

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY


(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 11 JAN 2006

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Applicant's or agent's file reference PC520AG		<b>FOR FURTHER ACTION</b>		See Form PCT/PEA/416
International application No. PCT/EP2004/008982		International filing date (day/month/year) 11.08.2004	Priority date (day/month/year) 14.08.2003	
International Patent Classification (IPC) or national classification and IPC A23L3/3436				
Applicant COBARR S.P.A.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 3 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand  10.06.2005		Date of completion of this report  09.01.2006		
Name and mailing address of the international preliminary examining authority:  European Patent Office - Gitschiner Str. 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax: +49 30 25901 - 840		Authorized Officer  Clement, J-P Telephone No. +49 30 25901-325		

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**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2004/008982

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-33 as originally filed

**Claims, Numbers**

1-16 filed with telefax on 10.06.2005

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-16
	No: Claims	
Inventive step (IS)	Yes: Claims	1-16
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-16
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

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**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

1. Reference is made to the following document/s/:  
D1: PATENT ABSTRACT OF JAPAN vol. 1999, no. 08, 30 June 1999 & JP 11 080555 (KISHIMOTO AKIRA) 26 March 1999 + english machine translation
2. The document D1 is regarded as being the closest prior art to the subject-matter of claim 1 and shows (abstract and paragraphs 21, 26 of machine translation in english) a container from a thermoplastic resin comprising an iron-based oxygen-scavenging composition composed of iron powder and a metal chloride of group IIIB, IVB or VIII; (chlorides of aluminium, tin and iron are much more specifically mentioned) wherein the oxygen-scavenging composition is formed by coating iron powder with the metal salt dissolved in an organic solution (ethanol, acetone or ether). The amount of the oxygen-scavenging composition in the thermoplastic resin is from 1 to 100 parts for 100 parts of thermoplastic resin.
  - 2.1 The subject-matter of claim 1 differs from this known D1 in that the thermoplastic resin is an aromatic polyester or a polyester/polyamide blend, the amount of the scavenging composition is from 100 to 10000 ppm by weight of the wall of the container, and the wall has a transmission Hunterhaze of up 0.04 percent per micrometer of the container wall.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).
  - 2.2 The selection of the thermoplastic resin and the selected range for the amount of the oxygen-scavenging composition provide protection against oxidizing compounds and also transparencies properties unobtainable with the resins and the higher amounts of the oxygen-scavenging composition disclosed in D1. The subject-matter of claim 1 is therefore considered as involving an inventive step (Article 33(3) PCT).

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- 2.3 Claims 2-16 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

CLAIMS

1. A container from a film-forming polymer, having at least one wall comprising an effective amount of an oxygen-scavenging composition wherein said oxygen scavenging composition comprises oxidizable metal particles and at least one protic solvent hydrolysable halogen compound and/or its adducts, wherein said protic solvent hydrolysable halogen compound and/or its adducts have been deposited upon the oxidizable metal from an essentially moisture free liquid, wherein the effective amount of the oxygen-scavenging composition is from 100 to 10,000 part by weight per million part by weight of the wall of the container, the film-forming polymer is an aromatic polyester or a polyester/polyamide blend, and the wall has a transmission Hunter haze of up 0.04 percent per  $\mu\text{m}$  of the container wall.

2. The container according to claim 1, wherein said protic solvent hydrolysable halogen compound is a water hydrolysable Lewis acid and/or its adducts and has been deposited upon the oxidizable metal from an essentially moisture free solution comprising an organic solvent.

~~3. The container according to claim 1 or 2, wherein the oxygen-scavenging composition comprises iron.~~

4. The container according to claim 3, wherein the protic solvent hydrolysable halogen compound deposited on iron is  $\text{AlCl}_3$ .

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5. The container according to claim 4, wherein the  $\text{AlCl}_3$  is deposited in the form of an adduct made from the interaction of  $\text{AlCl}_3$  with at least one organic solvent.
6. The container according claim 1 or 2, wherein the protic solvent hydrolysable halogen compound is deposited in form of an adduct made from the interaction of protic solvent hydrolysable halogen compound with at least one non-protic solvent, wherein at least one organic solvent is from the group consisting of ethanol, methanol, propanol, butanol, hexanol, diethyl ether, or ethyl acetate.
7. The container according to claim 3, wherein the salt deposited on iron is  $\text{FeCl}_2$ .
8. The container according to any one of claims 3 to 7, wherein the protic solvent hydrolysable halogen compound and/or its adducts is deposited upon the oxidizable metal from an essentially moisture free liquid.
9. The container according to claim 8, wherein the essentially moisture free liquid is ethanol.
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10. The container according to claim 8, wherein  $\text{AlCl}_3$  and/or  $\text{FeCl}_2$  are deposited on iron from a solution in an alcohol selected from the group consisting of ethanol, methanol, isopropanol, butanol, and hexanol.
11. The container according to claim 8 wherein the protic solvent hydrolysable halogen compound is selected from the group consisting of  $\text{AlCl}_3$ ,  $\text{FeCl}_2$ ,  $\text{FeCl}_3$ ,  $\text{TiCl}_4$ ,  $\text{SnCl}_4$ ,  $\text{SiCl}_4$ ,  $\text{POCl}_3$ ,  $\text{SOCl}_2$ ,  $\text{Al}(\text{OEt})\text{Cl}_2$  and n-Butyl  $\text{SnCl}_3$ .

12. The container according to any one of preceding claims, wherein the aromatic polyester is selected from the group consisting of polyethylene terephthalate and copolymers thereof wherein up to 10% by moles of units of terephthalic acid are substituted by units from isophthalic acid and/or naphthalene dicarboxylic acids.

13. The container according to any one of preceding claims, wherein the container is a stretched bottle.

14. The container according to any one of preceding claims, wherein the sidewall of the stretched bottle is 280 to 410 microns thick and has Hunter haze values of 20% or less.

15. The container according to any one of preceding claims, wherein the container does not exhibit any visible blooms after three days of accelerated oxygen absorbance.

16. The container according to any one of the preceding claims, wherein said particles of oxidizable metal are of iron having an average diameter less than 1.0  $\mu\text{m}$  and the iron-based compositions are incorporated into said wall in an amount of up to 500 parts by weight per million parts by weight polymer.

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